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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,489	03/10/2004	Mark A. Turner	2063.007800	3998

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EXAMINER

LE, DAVID D

ART UNIT	PAPER NUMBER
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3681

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/797,489	TURNER, MARK A.	
	Examiner	Art Unit	
	David D. Le	3681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,9-19 and 23-37 is/are rejected.
- 7) ☒ Claim(s) 6-8 and 20-22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is the first Office action on the merits of Application No. 10/797,489, filed on 10 March 2004. Claims 1-37 are pending.

Documents

2. The following documents have been received and filed as part of the patent application:
- Power of Attorney, received on 05/09/05

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "128b-128c" of Fig. 1 has been used to designate both the output shaft and the teeth of the corresponding gear assembly. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because it contains the phraseology "means". Correction is required. See MPEP § 608.01(b).

6. The disclosure is objected to because of the following informalities:

- Page 12, line 6, "the thrust nut 142" should be --the thrust nut 142d--;
- Page 14, lines 10-11, "the actuation controller 808" should be --the actuation controller 158--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. **The following is a quotation of the first paragraph of 35 U.S.C. 112:**

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 35 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an apparatus that is used to actuate control surfaces, does not reasonably provide enablement for a claimed apparatus, which includes a single means, as recited in claim 35. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor. In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983). See MPEP 2164.08(a).

9. **The following is a quotation of the second paragraph of 35 U.S.C. 112:**

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 10-11 and 30-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10:

- Line 2 recites the limitation "the translation nut". There is insufficient antecedent basis for this limitation in the claim.

Claim 11:

- Line 3 recites the limitation "a third drive assembly engaged with the first spur gear." This limitation appears to be inaccurate because, as shown in Fig. 6, the yaws spur gear (104c) is engaged with the yaw gear (134b). For the purpose of applying the art rejection, examiner assumes the above limitation as --a third drive assembly engaged with the third spur gear--.

Claims 30 and 31:

- Line 1 of both claims 30 and 31 recites, in part, "a method, according to claim 27". The present claim 27 is, however, a dependent apparatus claim. It is unclear whether claims 30-31 should be referring to the independent method claim 29 or the dependent apparatus claim 27. For the purpose of applying the art rejection below, examiner considers claims 30 and 31 to be dependent upon claim 27.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. **Claims 1, 5, 15, 19, 29, 32, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 4,679,485 to Nelson et al.**

Claims 1, 5, 15, 19, 29, 32 and 35:

Nelson (i.e., Figs. 1-2; column 1, line 8 – column 7, line 14) discloses a ballscrew actuator for operating a flight control surface comprising:

- A first spur gear (i.e., Fig. 2, element 108);
- A first drive assembly engaged with the first spur gear (i.e., Fig. 2, element 100);
- A second spur gear (i.e., Fig. 2, being the element that is identical to the element 108, which is operatively engaged with element 102);
- A second drive assembly engaged with the second spur gear (i.e., Fig. 2, element 102);

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- A gear assembly mechanically capable of being coupled with the control surface and engaged with the spur gears (i.e., Fig. 2, being the combination of elements 110, 112, 114, 116, 118, 120, 122, 124, and 126);
- Wherein at least one of the drive assemblies further includes:
 - A motor (i.e., column 6, line 51);
 - A speed reducer mounted to the motor and having an output shaft (i.e., Fig. 2, element 104) and a drive gear (i.e., Fig. 2, element 106) mounted to the output shaft and engaged with one of the spur gears (i.e., Fig. 2); and
- Wherein the ballscrew actuator mechanically combines two inputs from the first and second drive assemblies into a single mechanical output (i.e., Fig. 2, element 118) to the control surface.

13. Claims 1-5, 9-19, and 23-37 are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Patent No. 6,637,699 to Banks et al.

Claims 1-5, 9-19 and 23-37:

Banks (i.e., Figs. 1-9; column 3, line 16 – column 8, line 26) discloses a method and an apparatus (i.e., Fig. 1, element 100) for controlling a trajectory of a projectile comprising:

- A first spur gear (i.e., Fig. 3, being the roll spur gear element 302);
- A first drive assembly engaged with the first spur gear (i.e., Fig. 3, element 202);
- A second spur gear (i.e., Fig. 3, the pitch spur gear element 306);

- A second drive assembly engaged with the second spur gear (i.e., Fig. 3, element 206);
- A third spur gear (i.e., Fig. 3, yaw spur gear element 304);
- A third drive assembly engaged with the third spur gear (i.e., Fig. 3, element 204);
- A first gear assembly mechanically capable of being coupled with the control surface and engaged with the spur gears (i.e., Fig. 3, element 330);
- A second gear assembly mechanically coupled with a second control surface and engaged with the first spur gear and the third spur gear (i.e., Fig. 3, element 326);
- A central tube (i.e., Fig. 2, being the interior of the flange 220) and a bearing (i.e., Fig. 3, elements 366, 368, and 370) disposed between each of the spur gears and the central tube;
- Wherein the central tube is a blast tube (i.e., Fig. 1);
- A housing (i.e., Fig. 1, element 102) and a thrust bar (i.e., Fig. 2, element 212) mounted to the housing and to the central tube, such that one end of the gear assembly is mounted to the thrust bar;
- A motor (i.e., Fig. 3, element 324);
- A speed reducer mounted to the motor and having an output shaft (i.e., Fig. 3, element 322);
- A drive gear (i.e., Fig. 3, element 320) mounted to the output shaft and engaged with one of the spur gears;
- A translation nut (i.e., Fig. 6, element 508) having a clevis (being the Clevis 1 in Fig. 1 below);

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- A linkage (being the Linkage in Fig. 1 below) mechanically coupled with the clevis and capable of being coupled with a clevis (being the Clevis 2 in the Fig. 1 below) of a control surface shaft;

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Oct. 28, 2003

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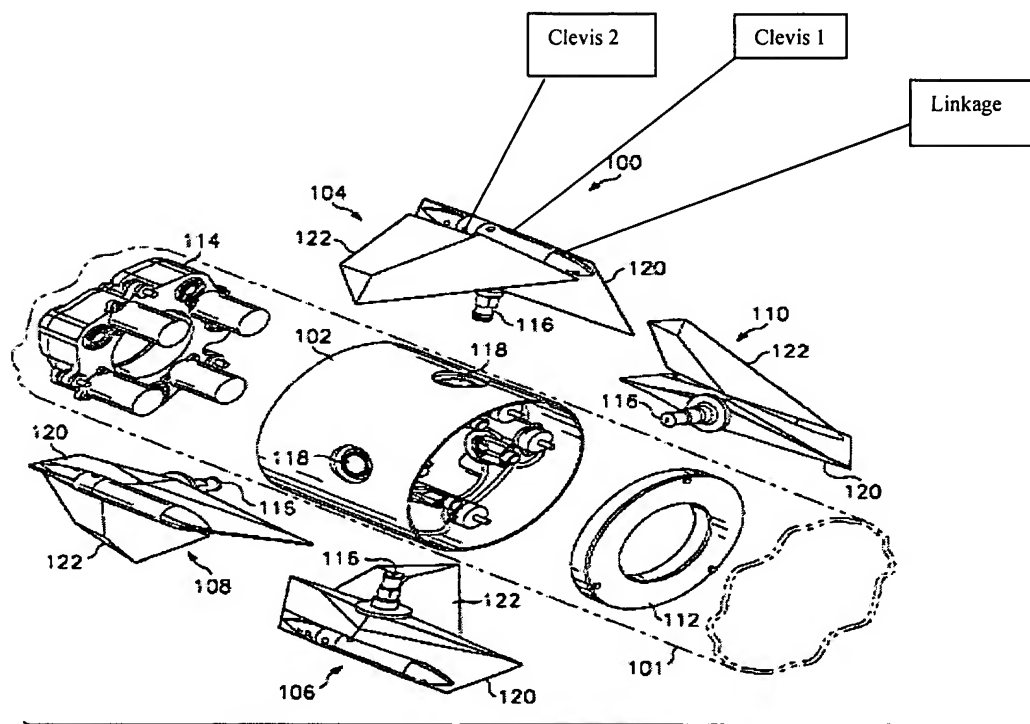


FIG. 1

- An actuation controller (i.e., Fig. 1, element 112) coupled with the drive assemblies, such that actuation commands may be transmitted from the actuation controller to the drive assemblies;
- Wherein the controlling apparatus (100) mechanically combines either roll and pitch inputs (i.e., Fig. 3, element 330) or roll and yaw inputs (i.e., Fig. 3, element 326) into a single mechanical output to the control surface.

Allowable Subject Matter

14. Claims 6-8 and 20-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Kish et al. (U. S. Patent No. 5,813,292) teaches a transmission system, as shown in Fig. 1.
- Weyer (U. S. Patent No. 4,738,415) teaches a hinge line flight actuator, as shown in Figs. 1-2.

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- Klopfenstein (U. S. Patent No. 4,745,815) teaches a non-jamming screw actuator system, as shown in Fig. 1.
- Tiedeman et al. (U. S. Patent No. 4,979,700) teaches a rotary actuator for leading edge flap of aircraft, as shown in Fig. 6.
- Nilsson (U. S. Patent No. 5,058,445) teaches a screw and nut driving device, as shown in Fig. 1.
- Baker et al. (U. S. Patent No. 6,247,666) teaches a method and an apparatus for non-propulsive fin control in an air or sea vehicle using planar actuation, as shown in Fig. 1.
- Johnson et al. (U. S. Patent No. 6,474,594) teaches an output shaft assembly for a missile control actuation unit, as shown in Fig. 2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Le whose telephone number is 571-272-7092. The examiner can normally be reached on Mon-Fri (0700-1530).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'David D. Le', enclosed within a large, loopy oval shape.

David D. Le
Examiner
Art Unit 3681
02/21/06

ddl